CHOOSING THE HEATING SYSTEM FOR YOUR HOME

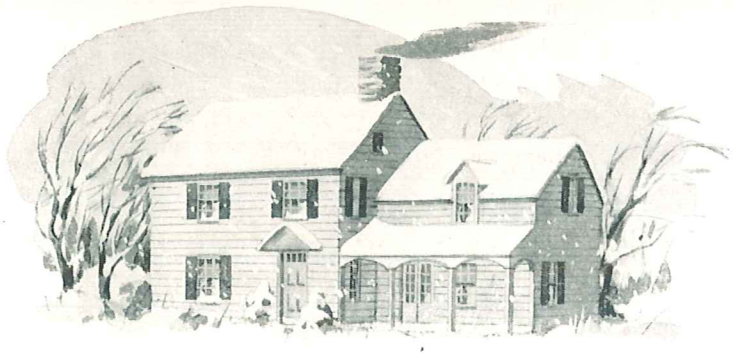
To Help You Select the Right Heating System for Your Home

This booklet contains valuable information to help you select the right heating system for your home. The appliances shown are pre-war models and will not necessarily be included in the Crane heating line of tomorrow. This line will include boilers and furnaces for every fu oil burners, stokers, controls, radiators and convectors — everything for every heating need. Your heating contractor will give you complete information as soon as lifting of war restrictions permits.

CRANE

836 S. MICHIGAN AVE.
CHICAGO, ILLINOIS

HOW TO GO ABOUT
SELECTING THE HEATING SYSTEM



So many advances have been made in the development of heating equipment that today any home can enjoy great heating comfort with a high degree of convenience and at a cost which is surprisingly economical.

This book is intended both to explain how a home is heated and to serve as a guide to aid in determining the type of heating system best suited to any house.

Before you select a heating system, consult your architect, heating engineer or heating contractor. These men know heating and can fit your new home or your present home with the heating equipment best suited to its individual requirements. For heating plants are "tailor-made." They should be planned for the home they are expected to heat. They should be planned to do a specific job adequately and economically.

Regardless of the type of system you require—regardless of its size—you can have the benefits of Crane heating in your home. Crane heating systems are *complete*. All parts are designed to work together for utmost efficiency. For maximum satisfaction from the system you install, make sure that it is a Crane System—throughout!

4 WAYS TO INSURE SATISFACTION IN YOUR HEATING SYSTEM

Like a "tailor-made" suit of clothes, a heating system which is selected and installed with careful consideration given to these "4 ways" will not only meet the heating needs of your home but also provide you with maximum heating satisfaction and efficiency at all times.

INTELLIGENT ANALYSIS

The early selection of an architect, heating engineer or heating contractor experienced in designing heating systems is essential in assuring a satisfactory system. For these men are qualified by training and experience to take the necessary steps toward giving you heating satisfaction. They will survey your home thermally, either in advance of construction by careful consideration of the plans, or by thorough study of all the factors involved in heating your present home. Such a survey takes into consideration such things as local climatic conditions, location and exposure of the house—the kind and amount of insulation, the amount of infiltration of cold air around windows and doors, and the benefits to be obtained from using storm sash or weatherstripping. All these things must be considered in relation to the system to be installed, and the fuel to be used.

Such an analysis intelligently considers all factors that determine the comfort and convenience your heating system will afford—the efficiency with which it will heat your home and will result in a system "tailor-made" to fit your needs.

PLANNING THE SYSTEM

After the building or plans have been carefully analyzed, the next step is planning the system. Planning, of course, gives full consideration to the findings of the analysis and includes not only the selection of the boiler or furnace, but the laying out of the piping or duct system and the selection of room heating elements as well.

GUARANTEED INSTALLATION

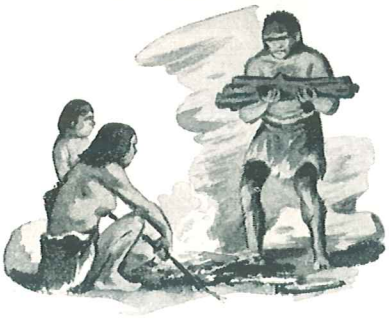
When the planning is completed, the system must be properly installed if a warm, comfortable home and economical operation are to result. Therefore, it is well to choose your heating contractor carefully, for the heating contractor is charged with the responsibility of installing the heating system. His use of skilled mechanics means that every connection will be properly made; and that when the job is completed, it will provide the utmost in satisfaction. Your heating contractor can also best recommend to you the make of heating equipment that will provide you with the convenience, comfort and efficiency you expect. And your heating contractor will guarantee the system; a blanket guarantee that only an expert can give.

PROMPT NEIGHBORHOOD SERVICE

Finally, when selecting a heating contractor to install your heating system, choose one who can give you year-in—year-out service. For in a heating system, just as in the care of your automobile, the ability to obtain prompt neighborhood service goes a long way toward providing maximum operating satisfaction.

Full consideration of these four vital needs will result in positive assurance of securing the best heating system for your home. In the meantime, a thorough reading of this book will help you in understanding some of the principles of operation of the various heating systems.

How SHALL THE HOUSE BE HEATED?



When man first heated his cave by an open fire, he was making a crude effort to use a combination of direct radiation and convection currents of warm air to get some measure of comfort for himself and his family.

But an open fire had many drawbacks, the first being that good heat distribution was not obtained, making it practically impossible to be warm when very many feet away from the fire. Then again, the choking smoke and dirt distributed throughout the dwelling by the rising currents of warm air made an open fire unpleasant.

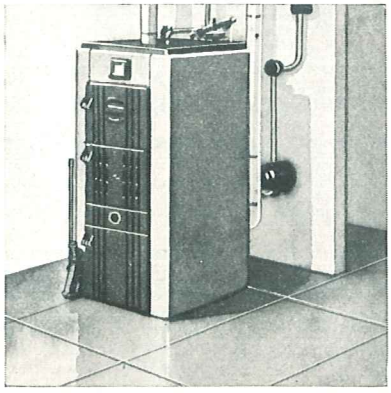
Therefore the next step in home heating called for a device to carry away this smoke and dirt. This need ultimately resulted in the fireplace, with a chimney, still in use in many countries today. The fireplace, however, has most of the same drawbacks as the open fire, and as a result has been almost entirely outmoded as a single source of home heating.

Following the fireplace, the next step in home heating was the development of the stove. With its use, many of the objections to the fireplace were overcome. The stove did not require as much attention; smoke and ashes were confined and not as likely to enter the room; and a more even distribution of heat was obtained.

Despite the stove's improvement over the fireplace, it was dirty; and the area closest to it was overheated, while the far corners of the room still remained cold. A serious objection to the stove which was also true of the fireplace was the necessity of having one in every room, if a pleasant degree of warmth was to be expected. Because this was impractical, many rooms remained unheated and this differing degree of temperature throughout the house was a menace to health.

Individual room heaters, whether stove or fireplace, still required frequent attention. And because at best, such devices gave decidedly uneven heat, it was recognized that a central system of heating was needed, in which the whole house could be heated from a single source, and the heat distributed evenly to each room as required.

THE CENTRAL HEATING SYSTEM



The development of the central heating system meant the moving of the heating plant away from the living quarters. This did away with the carrying of dirt and ashes through the house which had been one source of unpleasantness connected with either the open fire or stove. Central heating also assured better heat distribution. Today the central heating plant means a system offering a high degree of efficiency, and one that is beautiful to look at as well. Now it is possible to make use of the valuable space in the basements of homes for recreation purposes, workshops, etc., or it is even possible to build a home without a basement and still obtain the advantages that are found only in the central heating system.

Central heating systems are basically of two types. In one, air is warmed in a furnace and distributed by means of ducts to registers in each room. This circulation may be by gravity, relying upon the fact that warm air rises and cold air falls, or the system may have a fan to force the warm air through ducts into the room.

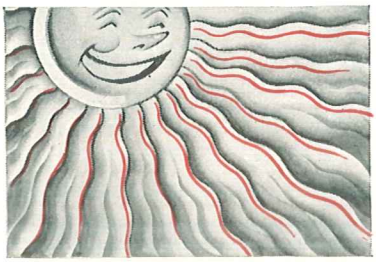
The other system of central heating utilizes steam or hot water produced in a boiler and circulated through pipes to radiators in each room. This circulation may be by gravity or may be forced as in the case of forced hot water heating. Steam heating, too, may be accomplished by gravity circulation or through circulation created by the development of a vacuum in the system which tends to speed up the movement of the steam.

Heating THE ROOM

Having discussed the essential differences between the warm air system and the steam or hot water system, we should now consider the important differences which exist in transmitting the heat generated in the heating plant to the occupants and objects of the rooms in the house. These differences determine the comfort which we obtain from our heating system. There are basically three ways in which this is accomplished:

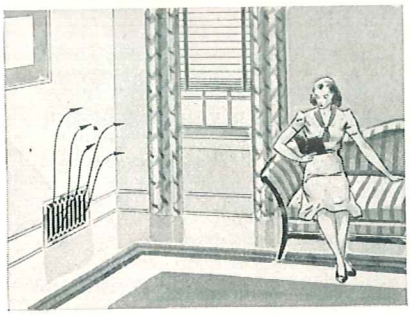
1. Direct Radiation
2. Convection
3. A combination of direct radiation and convection

Following is an explanation of the functions of each of these methods.



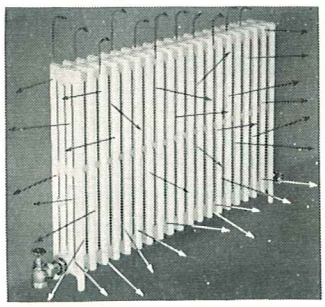
DIRECT RADIATION

Direct radiation heating is defined as the transmission of heat through space by wave motion. Such waves or rays are comparable to the rays of the sun, and are infra-red rays. The waves or rays not only warm the air in the room but warm every object with which they come in contact, through penetration.



CONVECTION

Convection heating is defined as the transmission of heat by circulation. In this method, air is warmed by a heating element and circulates by means of gravity due to the difference in weight between warm air and cold air.

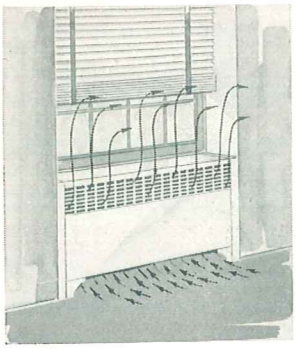


DIRECT RADIATION AND CONVECTION

This is a combination of the two previously mentioned ways of heating a room. Combining the benefits of the infra-red rays from direct radiation and the circulation of warm air by convection. Such a combination offers the nearest approach to an ideal way of room heating.

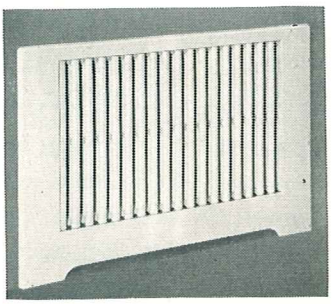
APPLYING THESE PRINCIPLES

There are practical ways of applying these methods of heating to the rooms of a house excepting direct radiation. There being no practical examples of heating elements which supply only direct radiation heating. A warm air heating system, for instance, is an example of heating the home by convection. In such a system air is warmed in the furnace and circulated through ducts, entering the rooms through registers. When the air is cooled it is returned to the furnace through a cold air return duct for re-heating. However, in convection heating while the contents of the room are in an atmosphere of warm air, they may actually be colder than the surrounding air. This is especially true of walls, floors, and ceilings. In the case of steam or hot water, convection heating is obtained through the installation of convector radiators. In such cases the heating element is in the room and heats only the air in that room, circulating it throughout the room.



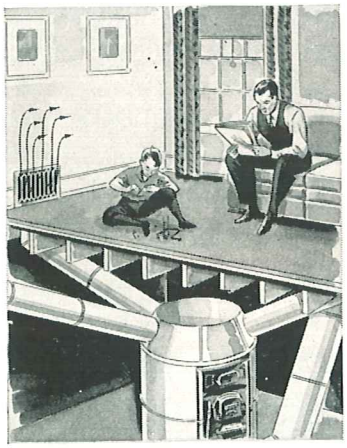
RADIATOR HEATING

The most satisfactory method of room heating, however, is by a combination of direct radiation and convection current heating; such a combination is found in the room radiator used with steam or hot water heating systems. As previously mentioned, radiators give off heat in wave form which is comparable to the rays of the sun and like the sun's rays these rays are infra-red. In addition to direct radiation, convection heating is obtained from the radiator due to the circulation of air over the coils of the radiator. The infra-red rays given off by the radiator penetrate every object in the room and have the ability to heat such objects to a degree higher than the surrounding air, making furniture, walls and floors warm to the touch. This combination provides a degree of comfort and satisfaction which is not found in either one of the other room heating methods. Today, with modern small tube radiators, the room heating element is attractive in appearance. It, too, may be recessed into the wall just as the warm air register or the convector radiator, providing a neat and handsome installation.



WARM AIR *Versus* STEAM AND HOT WATER HEATING

The final choice as to which type of heating system you select should be based upon a consideration of all the factors involved. We have already shown some of the basic differences in the systems and the even greater differences in the way in which the two types of systems warm the rooms in which you live. We will now point out some additional facts for further consideration. Both warm air heating and steam or hot water heating have many advantages; therefore, it is necessary to sort out the particular advantages which appeal most to you and to arrange them in such order that the final analysis will clearly show which particular system appeals to you most and which will provide you with the most comfort, convenience and economical operation throughout the years.



WARM AIR

The warm air furnace in its simplest form may be cheaper to install than either a steam or a hot water system; however, when it is desirable to obtain all the advantages which a warm air system has to offer, such as forced circulation, filtration, humidification and washing of the air, it is necessary to go to a more expensive type of system. Such a system includes a greater number of ducts for carrying the warm air from the furnace to the rooms and a more elaborate system of cold air return ducts which, of course, results in greatly increased costs. However, all these advantages are worth-while and should be carefully considered in the choice of your heating system. Warm air systems heat rapidly; ordinarily as soon as the fire is started, you can feel warm air from the register. Warm air heating, however, provides only convection current heating. Registers, of course, may be installed in the walls, leaving all the floor area free for the placing of furniture. Because of the dependence of warm air heating on the free circulation of air, it is usually advisable to install registers on inside walls. By so doing, the currents of warm air that blow from the register are not affected by the infiltration of cold air through windows.

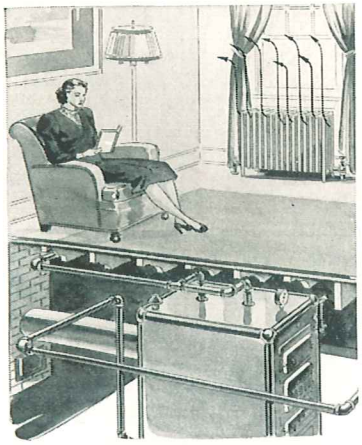
Of course, in warm air systems where a fan is used to speed up the circulation of air, it is possible to obtain a greater flow of air at all times when the furnace is operating; however, even under such conditions, it is advisable to have registers on inside walls. In the case of gravity warm air systems, it is also necessary to install the furnace as close to the center of the basement as possible, so as to reduce the length of the ducts leading to the registers in the room. But in the case of forced warm air, more latitude in the location of the furnace is possible, as the fan installed in the system increases the circulation sufficiently to force air through the ducts. Even the register farthest from the furnace is supplied and a sufficient volume of warm air to every room is assured.

In warm air heating, when the fire is checked or the fan is shut off, the air in the room begins to cool immediately. This action tends to produce what may be undesirable fluctuations in the temperature of the house. However, it has its advantages in providing rapid checking of the heat in the house in early spring and fall when very little heat is desired.

At this point, it is well to point out that it is impractical to consider using the warm air heating system to cool the home in the summer. A full explanation of this will be found on page 14.

STEAM and HOT WATER

Steam and hot water heating on the other hand may be somewhat more expensive to install than the simplest of warm air systems, but in a system comparable in all respects there is likely to be very little if any difference in the original cost.



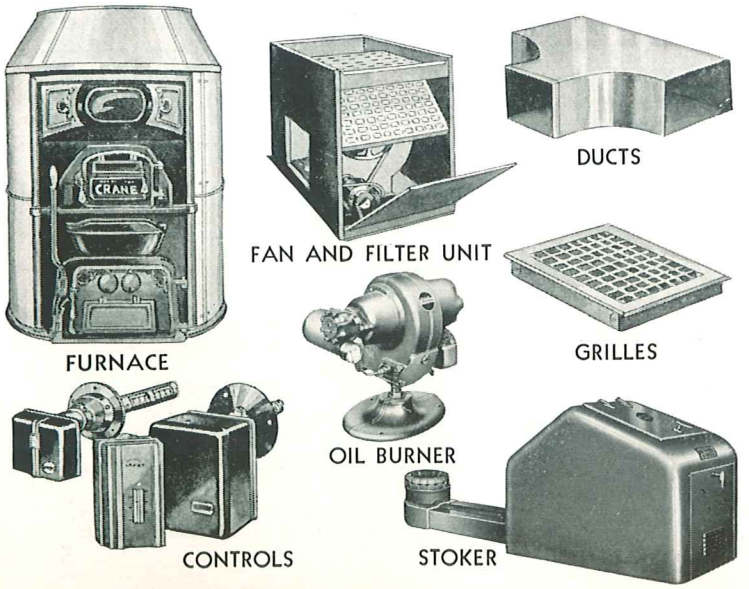
Because of inherent features in steam and hot water systems, it is logical to expect that operation and maintenance costs will probably be lower over the years. Steam is slightly less flexible in its use than hot water, because it is impossible to obtain any heat until the water in the boiler has been brought to a boil. But steam will heat a room quicker than hot water because of the higher temperature of the steam. With hot water, on the other hand, a high degree of flexibility is obtainable; and it is possible to obtain warmth from water of very little temperature. This, of course, means that almost as soon as the water in the boiler starts to heat, it begins circulating to the radiators.

Both systems have this in common: They cool slowly when the fire is checked; steam is slightly faster in cooling than water. But because they are both contained in a cast iron radiator which is slow to cool, this tends to retard the cooling off of the house and assures a more even temperature. At this point it is well to mention that basically the only difference between steam and hot water heating is that in one water is boiled until steam is formed; the steam is then circulated through pipes to radiators in each room. In a hot water system, however, heated water is circulated in the pipes to the radiators.

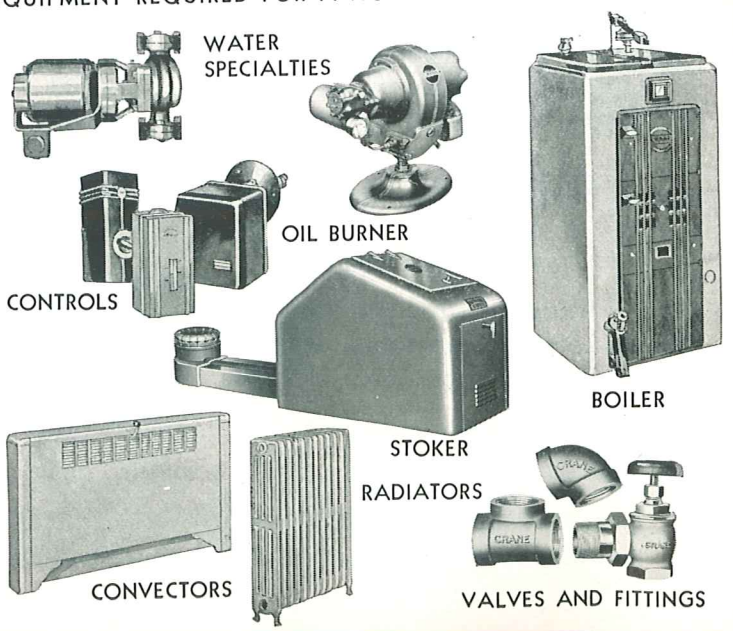
In steam or hot water heating, radiators are used as the heating element in the room—these provide a combination of infra-red rays and convection heating. When radiators are used as room heating elements it is logical to place them against outside walls, preferably under windows where they can heat the cold air which filters in around the windows and provide a higher degree of heat along cold outside walls, eliminating the chills which occur due to heat losses through the walls. With such a system, the heating medium, either steam or hot water, is carried to the room radiators in small pipes and the boiler can be installed at any location in the basement that is desired. The pipes that carry the heating medium being small are readily placed between partitions in old buildings, thus offering a most desirable type of system for such cases where it is necessary to replace the present heating system. Whereas in the case of an old home it is not always practical to install ducts for a warm air system, particularly where the home is more than one story high.

While the major objection in the past has been to the amount of floor space used by a radiator and its ungainly appearance, today radiators are good looking for they are made with small tubes and occupy very little floor space or can be completely recessed in the walls if desired. If your preference leans toward a unit similar in outward appearance to a warm air register, it is possible to obtain a convector radiator which completely recesses into the wall and allows only the grille to be seen. However, in such cases the room is heated only with convection currents similar to warm air heating. Steam or hot water heating systems, too, can be equipped with devices for humidifying, filtering, and washing the air when desired, such devices are explained in greater detail on page 15.

EQUIPMENT REQUIRED FOR A WARM AIR SYSTEM



EQUIPMENT REQUIRED FOR A HOT WATER OR STEAM SYSTEM



AUTOMATIC HEATING

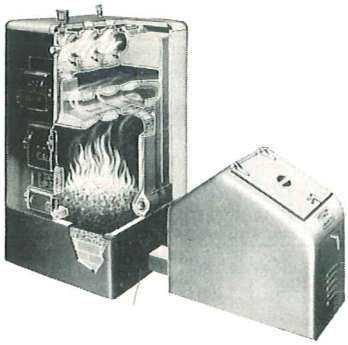
Any central heating system may be automatically controlled regardless of the fuel burned. The degree to which the system may be made automatic, however, depends upon the type of fuel used and upon the preference of the home owner.

In the home having automatic heating, tending furnace is a thing of the past. A thermostat or heat regulator on the wall of the living room can be set at the desired temperature; and the heating system, working automatically, will keep the house at that temperature. Considering time and energy saved as well as the increase in comfort provided, automatic heating may well be considered a good investment—one the modern home should not be without.

FUEL

"Which fuel is best?" This is a question that is often asked by home owners who are considering the installation of a heating system. As a matter of fact, there is no such thing as a "best" fuel. In various localities, coal, oil or gas may be the most economical fuels. Thus, local conditions, and the amount of automatic control desired, enter into the selection. A few of the significant facts about the use of each fuel may aid you in reaching a decision as to the kind you prefer.

COAL

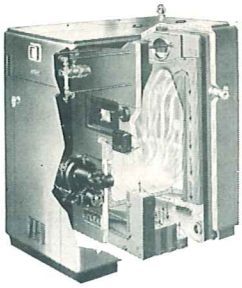


Automatic heating with coal is made possible by the addition of a stoker. Thus, frequent tending is done away with.

Stokers are of two main types. The hand-filled hopper type, is the most economical as to first cost, is practical and commonly used. The bin-fed type takes coal from the bin and feeds it into the furnace. An installation of this type is usually expensive and the effort it saves should be carefully balanced against its cost.

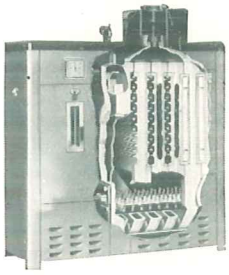
In stoker firing, cheaper grades of coal may be used satisfactorily; and with the underfeed principle of stoker construction, combustion is more nearly complete, which results in less ash and clinker—though this should be removed daily for efficient operation. The Crane Autocoal Stoker is illustrated on page 18.

OIL



An efficient oil burner installed in either a boiler or furnace will provide fully automatic heating. A thermostat control on a living room wall is set at the desired temperature; and this temperature is then maintained with no more thought or effort on the part of the owner. The only attention the owner of an oil fired system need pay to his heating is the occasional filling of the tank with oil. The most satisfactory results are obtained when the boiler or furnace is a self-contained unit designed to burn oil, though an old boiler or furnace may be converted by the addition of a conversion type oil burner. Oil burning boilers, furnaces and the Crane Conservoil Burner are illustrated on page 17.

GAS



With gas heating, all the advantages of automatic heating are secured. Once a gas burner is installed, the room thermostat automatically keeps the room at a constant temperature.

No other attention need be paid to the burner, save the turning off of the pilot light during the summer and the starting of the system in the fall.

A gas conversion burner can be installed in a boiler or furnace designed for other fuels, but when installing a new system, it is usually more economical to install a boiler designed especially for burning gas. A highly efficient gas boiler, the *Basmor*, is illustrated on page 16.

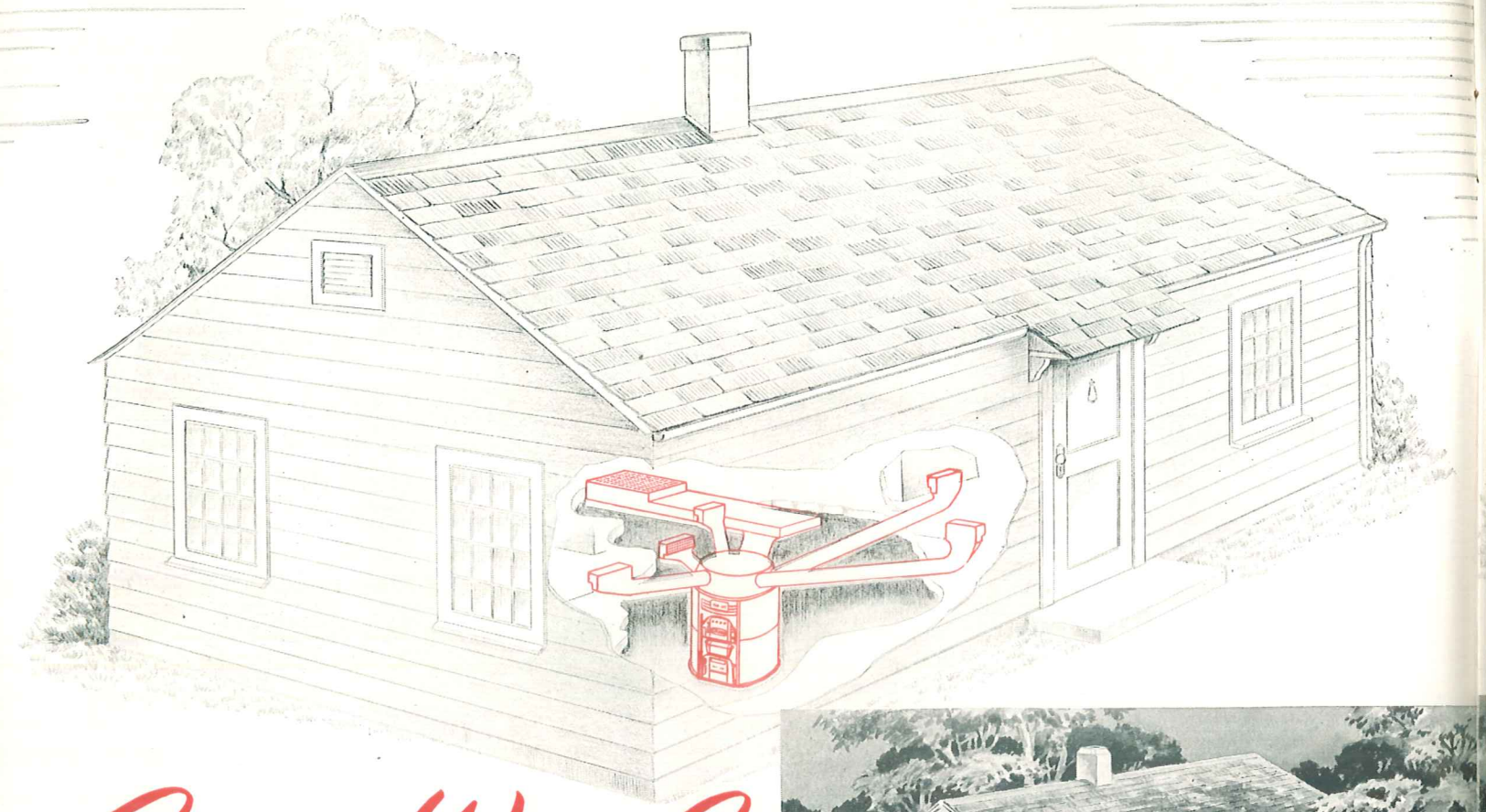
CONTROLS

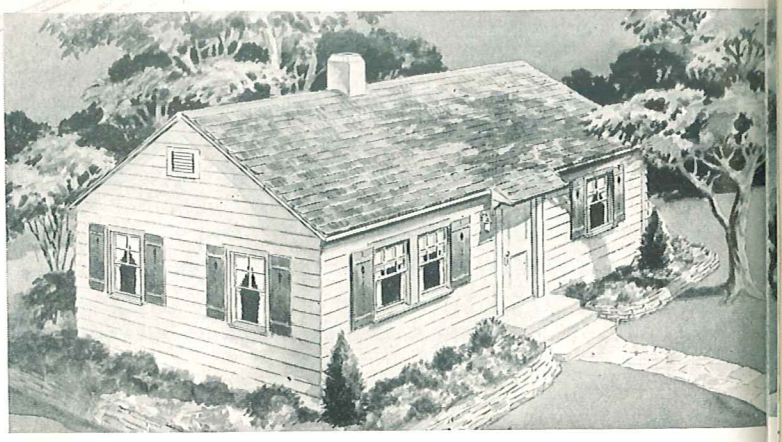
The controls for automatic heating are of major importance if efficient, economical heating is to be assured.

The master control is the room thermostat which is set for the temperature desired, and which actuates the various controls that operate the oil burner, gas burner or stoker. This thermostat anticipates changes in temperature in the room and maintains within a narrow range the desired temperature twenty-four hours a day. With automatic controls the house is kept constantly warm and comfortable; and zones of cold and hot air that uneven heating causes are eliminated. All controls must of necessity be accurately made to assure satisfactory operation at all times as they are completely automatic in operation. Crane controls are illustrated on page 18.

GETTING DOWN TO CASES

As you narrow your search for the best heating system for your home, you are confronted with the fact that your choice is not simply between warm air, steam or hot water, but between several types of systems within these classifications. On the following pages are diagrams and detailed descriptions of the six types of central heating systems which are most practical—and most widely used—for residential heating.





Gravity Warm Air
HEATING SYSTEM

The equipment required for a gravity warm air system includes—a furnace, ducts, registers and—possibly—a humidifier to add healthful moisture to the warm air. A separate or supplementary domestic hot water heater is required. With this system, room heating depends entirely upon gravity, the rising of the air as it is warmed and its return to the furnace when cooled. The air is heated in the furnace and travels to the room through ducts entering through registers in wall or floor. Cold air from each room is returned to the furnace through another system of ducts.

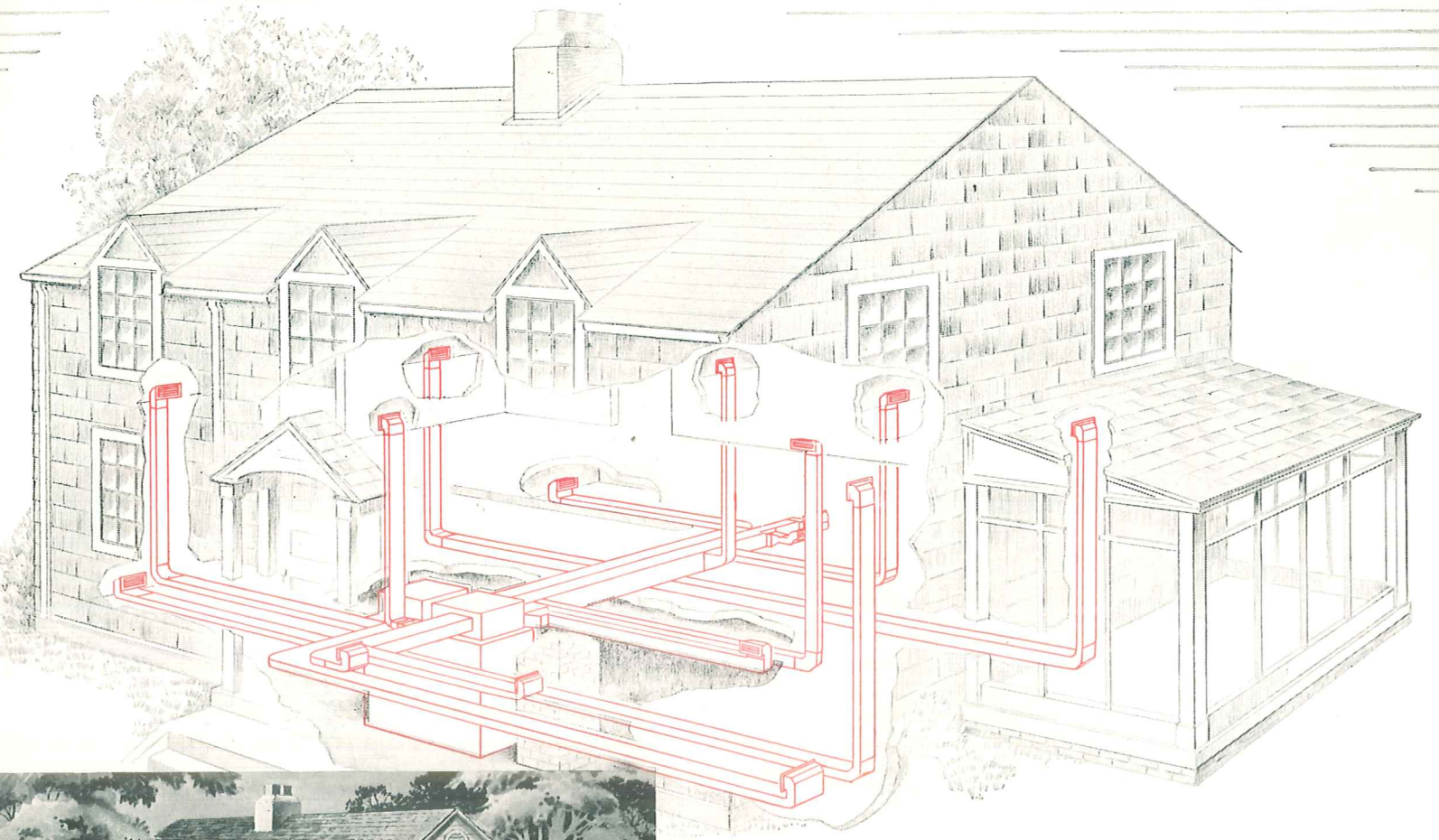
The force in a gravity system that moves the warm air through the ducts is the difference in weight between warm air and the cold air returning. This difference is not very great; hence, no sharp angles nor long lateral ducts should be used and all registers should be as close to the furnace as possible.

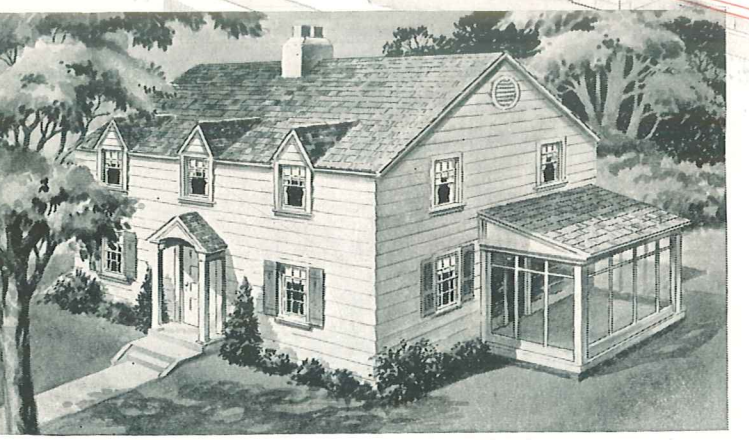
For this reason, in a gravity system, the furnace should be located in the center of the basement. Registers should be placed on inside walls because shorter ducts can be used and because cold outside walls retard the flow of rising warm air.

With a gravity system a humidifier can be installed, but filters and air washers are not practical as they would retard the flow of air too greatly. This type of central heating system in its simplest form with but one return duct is usually the lowest in original cost. As additional return ducts are added to improve circulation and increase efficiency, the cost rises rapidly. On page 17 are illustrated furnaces for use with coal, or oil. These furnaces are distributed by Crane and are available through your Heating Contractor.

REQUIRED EQUIPMENT:

Furnace • Ducts • Registers





Forced Warm Air

HEATING SYSTEM

Equipment for a Forced Warm Air Heating System is the same as that required for a gravity system with the addition of a blower or fan to force the air through the ducts. Forced warm air is a more expensive installation than gravity warm air. The furnace may be located in any part of the basement or the system may be used in a house without a basement. The fan can be relied upon to force the air through the ducts, where gravity would have no chance to operate, hence, somewhat greater latitude is possible in the location of registers than in the simple gravity system. However, for greatest efficiency, it is advisable to locate registers on inside walls, as close to the furnace as possible.

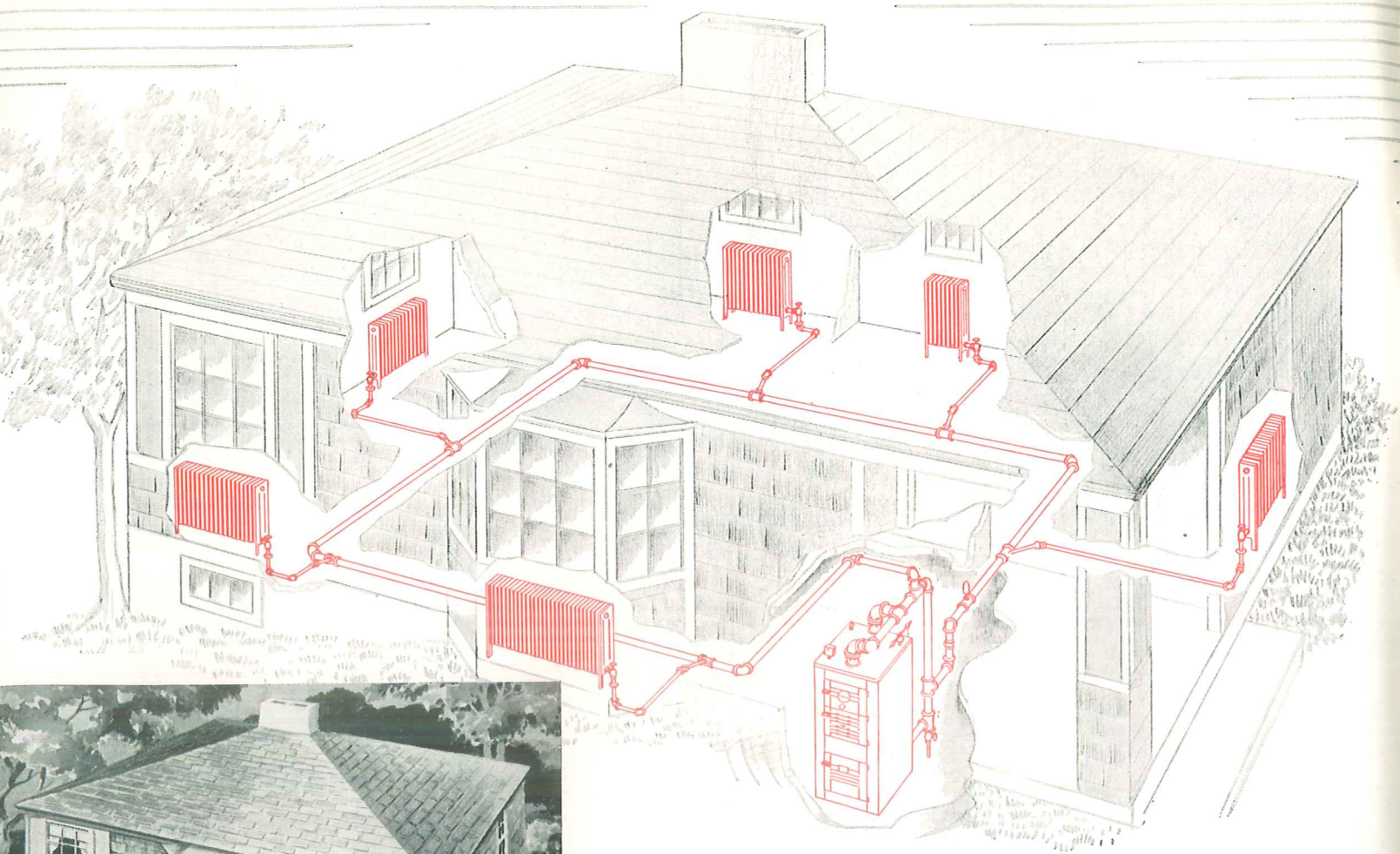
Ducts distribute heat to registers in each room as in the case of a gravity system. A separate set of ducts is installed to permit the return of cold air to the furnace. One advantage offered by the Forced Warm Air System over gravity is the ease with which winter air conditioning equipment may be added. Filters, humidifiers, air washers can be applied to most forced warm air systems. Separate provision must be made for domestic hot water during the summer.

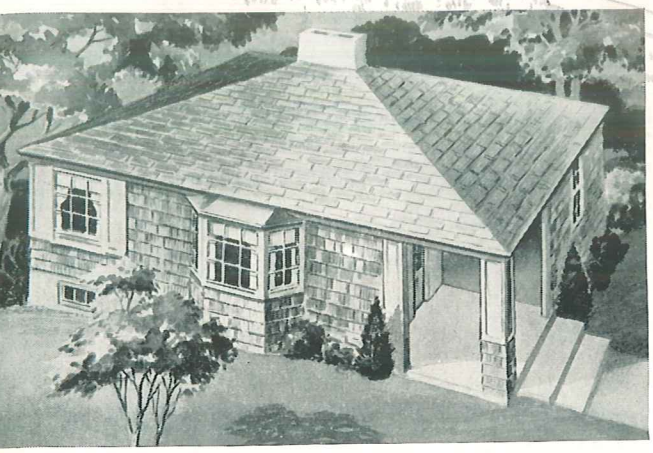
Equipment needed includes—furnace, ducts, fans, registers and humidifiers plus, perhaps, filters or air washers. Any of the furnaces shown on page 17 may be used and they give a wide choice of fuel selection—coil, oil, or gas.

REQUIRED EQUIPMENT:

Furnace • Ducts • Registers • Blower or Fan • Controls • Humidifier

Filters and air washers are optional.





One-Pipe Steam HEATING SYSTEM

This is the simplest of the steam heating systems, which make possible all the comforts and convenience of infra-red heat. Cost of installation is low if there is a basement in the house. If the house has no basement, a condensation pump must be included which tends to increase the cost.

The one-pipe steam system provides clean, rapid heating in each room. Either radiators or convectors may be used with this system. The "one-pipe" or main serves both as the steam supply and as the condensation return (as steam condenses to water in the radiator or convector, the water returns to the boiler through the same pipe). The one-pipe steam system is a durable plant. When it is equipped with automatic controls, it can be used to furnish a year 'round supply of domestic hot water without the need for a separate hot water heater.

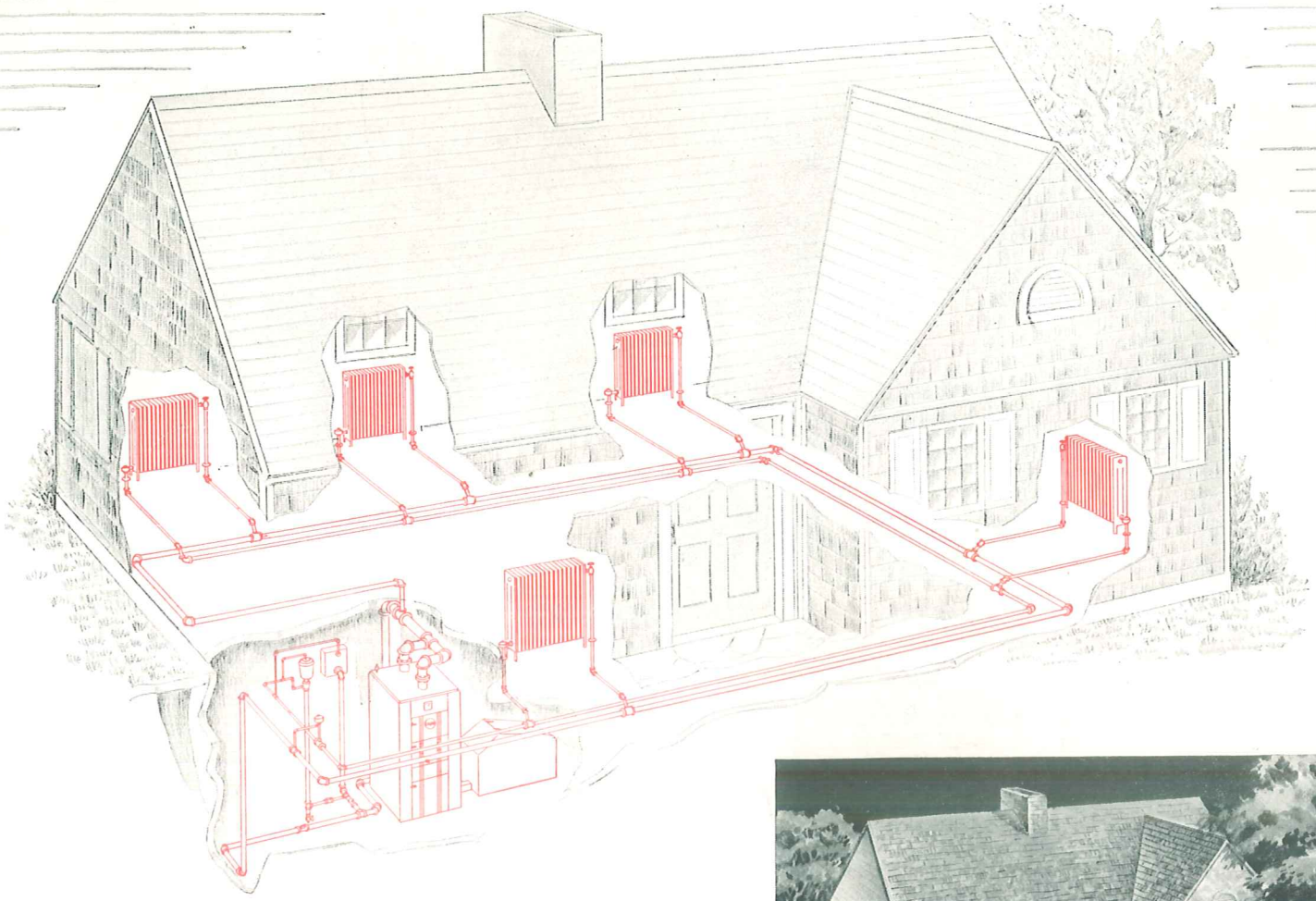
With the one-pipe steam system, radiators or convectors can be installed in the preferred location, under windows on outside walls where they warm the air as it enters the room.

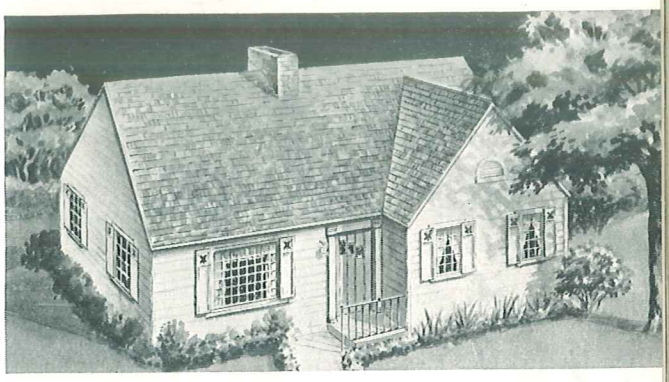
The equipment required for a one-pipe steam heating system includes—a boiler, radiators, or convectors, air vents for radiators in each room, pipes, valves and fittings. If the system is to be automatic, a coal stoker, oil or gas burner and controls must be included.

The above illustration shows a Crane Boiler equipped for hand firing. This same boiler may be had with this system for stoker or oil firing, or any of the boilers illustrated on pages 16 and 17 may be used.

REQUIRED EQUIPMENT:

Boiler • Pipe • Valves and Fittings • Air Vents • Radiators or Convectors





Two-Pipe Steam
OR VAPOR HEATING SYSTEM

The two-pipe system operates at a lower pressure than the one-pipe system. It is not as simple to install and is somewhat more costly. However, this system provides more rapid circulation of steam and tends to reduce the cost of operation. In the two-pipe steam system, steam travels through one set of pipes to the radiators and the condensate or water is returned to the boiler through a separate set. Smaller pipes can be used than in a single pipe system, as one set of pipes carries steam to the radiators, the other set water from them, assuring faster circulation.

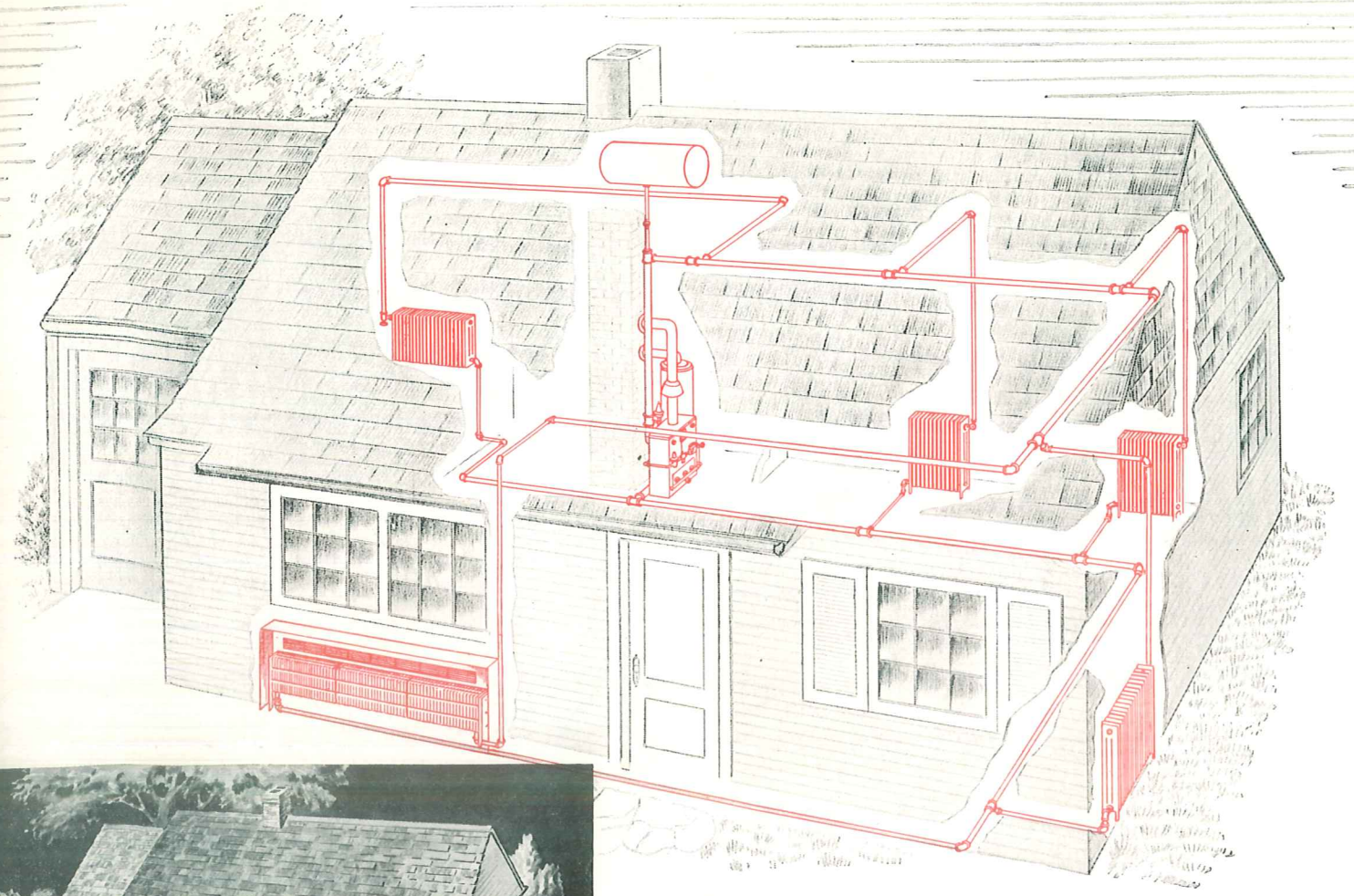
All the advantages of radiator location, infra-red ray heat and rapid heating described under the one-pipe steam system apply to the vapor system as well.

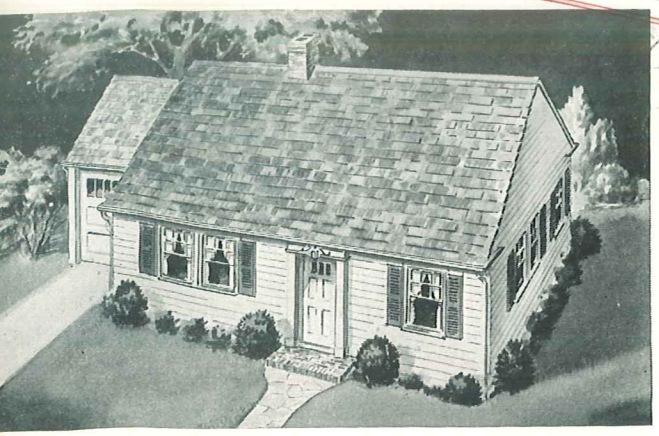
The two-pipe system may be used in houses without basements as well as in those with basements. Where installation is made in a house without a basement, a condensation pump is required. When automatically fired, a year 'round supply of domestic hot water may be had with the addition of an indirect heater. If automatic heating is desired, a coal stoker, oil or gas burner and controls must be included. As in the single pipe steam system, any of the Crane Boilers illustrated on pages 16 and 17 may be used for this system—with whatever fuel is preferred.

REQUIRED EQUIPMENT:

Boiler • Pipe • Valves and Fittings • Thermostatic Traps • Boiler Return Trap • Radiators or Convectors

Condensation Pump where installation is not in a basement.





Gravity Hot Water
HEATING SYSTEM

This system is simple to install and moderate in cost. It depends for its operation upon the fact that hot water being lighter than cold water rises. Thus as the water is heated it can be circulated naturally through the pipes and into the radiators in each room. This system requires two sets of mains, one to conduct the hot water to the radiators, the other to return the cooled water to the boiler for re-heating.

An advantage of the Hot Water System is its flexibility. It is not necessary to circulate water of high temperature. In spring and fall when very little heat is required, this is particularly desirable. Furthermore, because the heating medium is hot water and the radiators of cast iron are slow to cool off, more even temperature is assured.

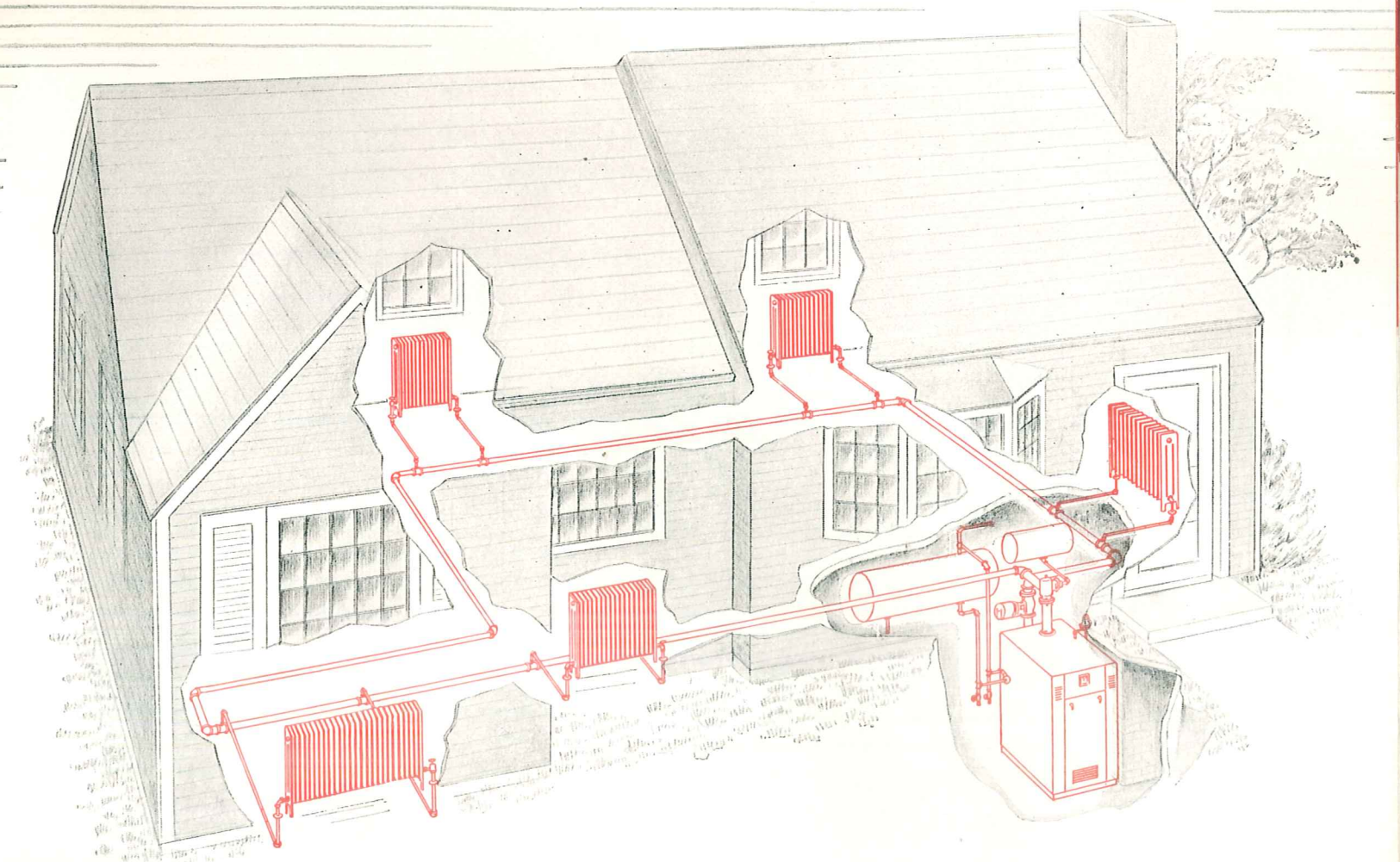
As in a steam system, radiators that provide infra-red ray heating or convectors are installed on outside walls below windows.

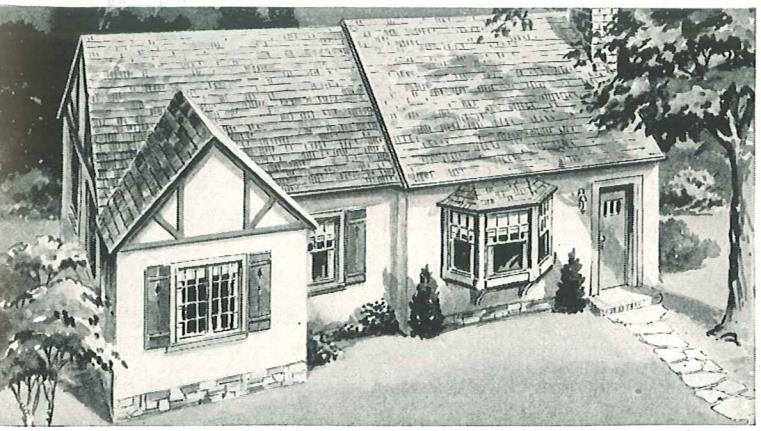
When the system is automatically fired a year 'round supply of domestic hot water may be had with the addition of an indirect heater.

This system may be installed in houses with or without basements and any Crane Boiler illustrated on pages 16 and 17 may be used. It is adaptable for hand or stoker firing of coal or may be used with gas or oil.

REQUIRED EQUIPMENT:

Boiler ○ **Pipes** • **Valves and Fittings** • **Radiators or Convectors**





Forced Hot Water
HEATING SYSTEM

Forced hot water systems are of two basic types: the two-main and single-main systems. In the former, circulation of the hot water is accomplished through separate supply and return mains.

The single-main system makes possible the elimination of one set of mains and assures proper circulation through the use of special circulating fittings. Both systems use a circulating pump to assure rapid circulation of the hot water. Recently developed, this single-main system is rapidly gaining in popularity. It is a fast, flexible heating system for residences of all sizes. The system requires smaller and less expensive pipes than either steam or gravity hot water systems. Its cost of operation is relatively lower than any of the others. The fact that only one pipe is required means an inexpensive installation.

The forced hot water system may be used in houses with or without basements. Radiators offering the advantages of infra-red rays, or convector radiators, may be used to heat the rooms. The domestic hot water supply for year 'round needs can be obtained with an indirect heater installed in the boiler when the system is automatic.

Any Crane Boiler illustrated on pages 16 and 17 may be used with this system and any fuel may be burned.

REQUIRED EQUIPMENT:

Boiler • Pipe • Valves and Fittings • Radiators or Convectors • Circulating Pump • Controls

WHAT ABOUT *Air Conditioning*

During recent years, there has been a widespread tendency to sell heating as a sort of accessory to "air conditioning." Certainly nothing has been more misunderstood by the general public. Owing probably to the influence of theater and store installations, air conditioning, in the mind of the average man has come to mean summer cooling.

Because of the great confusion over the term "air conditioning" a standard definition of the term has been adopted by the American Society of Heating and Ventilating Engineers as follows: Air conditioning actually means the simultaneous control of all or at least the first three of these factors affecting both the physical and chemical conditions of the atmosphere within any structure. These factors include temperature, humidity, motion, distribution, dust, bacteria, odors, toxic gases and ionization, most of which affect in greater or lesser degree human health and comfort.

At the present stage of development the filtering and humidifying of air are comparatively simple operations. But the equipment required for dehumidifying and cooling is extremely expensive and not always satisfactory when applied to the home. To warm a house in winter—to cool it in summer and to filter, humidify or dehumidify the air in it at all times are as yet too expensive a luxury for any but the most palatial homes.

Therefore, since the requirements of heating and cooling are so different it is obviously either inefficient or extremely expensive to do both with the same system. A heating system should be purchased as a heating system alone, not on the basis of adding cooling later.

WINTER AIR CONDITIONING

Winter "air conditioning" usually means the heating, humidifying, filtering and washing of air. Of these, heating is by long odds the most important. And unless a winter air conditioning system provides adequate, fully controlled heat, no amount of air treatment can compensate for that omission.

There are practical means for securing proper air humidification, filtration and washing. For instance, a gravity type warm air heating system can be equipped with a humidifying device, and a forced warm air system can be equipped to provide all three—humidification, filtration and air washing—because of the extra force obtained through the use of a fan. Steam or hot water systems, too, can be equipped with devices of various types to provide satisfactory degrees of humidification, filtration and air washing. Such devices are explained in greater detail on the next page. Of the three stages of air conditioning mentioned above and of next importance to heating is humidification. However, in this regard, it is well to bear in mind that the desire to humidify the air in an entire home should not necessarily be the deciding factor in choosing a particular type of heating system. For as a matter of fact, many of the rooms in a home do not require additional humidification. For instance, the kitchen ordinarily receives enough humidity from cooking; and the bathroom, of course, is usually unneedful of further humidification. Bedrooms are occupied only at night and then it is desirable to have the windows open; therefore, in most parts of the country, sufficient moisture is obtained from the night air to satisfy the needs for humidification. Eliminating such rooms then leaves us with really only two rooms in the home that may actually require additional humidification: the living room and dining room, and these two rooms are very easily provided with humidification in a steam or hot water heating system through any of the devices explained in detail on the following page. And, too, with steam or hot water heating, all the rooms in the house can receive the full benefits of infra-red ray heating.

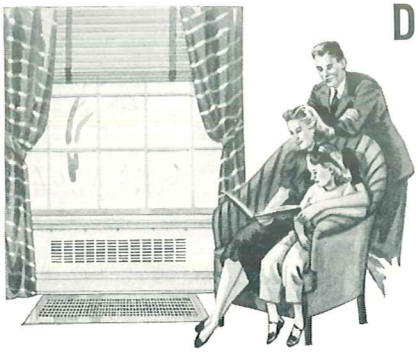
Equipment for

WINTER AIR CONDITIONING

Winter air conditioning including the warming, humidifying, filtering and circulating of air, aids in maintaining health and comfort during the cold months. In general this may be accomplished in a warm air system or a split system by means of ducts which deliver the filtered, humidified air to the various rooms of the house.

In a steam or hot water system the conditioning unit may be in the room itself doing away with any additional installation of ducts. Below are described these two types of systems—one the ductless room unit, the other a split or duct system.

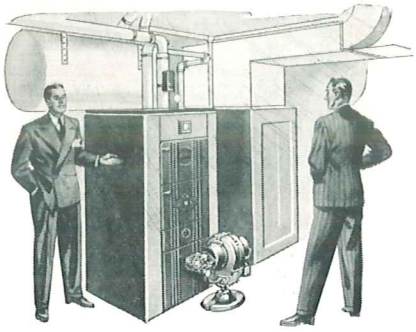
In addition to the devices mentioned there are many types of individual room humidifiers on the market that will provide a satisfactory degree of humidification.



DUCTLESS SYSTEM

The Ductless unit is a recent development designed to provide the benefits of winter air conditioning in conjunction with a steam or hot water heating system without the necessity of running ducts between the walls and floors. This unit, in addition to providing humidification and filtration of the air, also heats it. Therefore, it supplements or may entirely replace the radiator in such rooms where it is used. This is accomplished through the incorporation of a fan, air filter, humidifier and heating element in the unit. The installation is made so that part of the unit is in the floor and part in the wall. A register in the floor draws in room air, filters, humidifies and heats it and discharges it through a register in the wall. Such a unit will provide sufficient humidification for a large portion of the average home. In larger homes more than one unit can be installed as desired.

SPLIT SYSTEM



As the name suggests, the split system is a combination of steam or hot water heating and warm air heating. In the application of this system, it is usual to heat most of the rooms of a house with radiators. Certain selected rooms are heated, however, by warm air led through registers and ducts from an air-heating chamber in the basement. The source of heat within this chamber is a steam or hot water coil connected directly to the regular boiler. This air chamber also contains equipment for humidifying and filtering the air. With this system extreme flexibility is assured as those rooms where radiator heat is desired may be heated from the boiler while those rooms where warm air heating is preferred may be heated by the system of ducts. This also provides a means of circulating humidified, filtered air throughout the house.

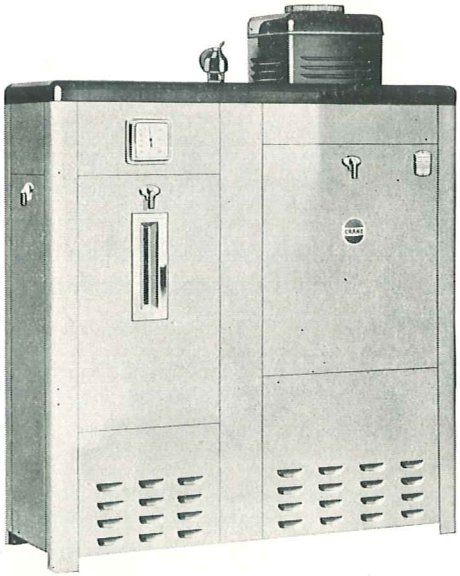
SUMMER CONDITIONING

We have not touched upon the matter of air temperature control so far as summer comfort in the home is concerned, excepting to mention that cooling and heating with the same system is not practical for the average home because of the high cost. However, it is possible to obtain increased comfort in the home in the summer months by the installation of some device to create circulation of the air, and, likewise, to draw cool night air into the house. The fan used with a forced warm air system is not usually satisfactory for this purpose because of its limited ability to move large volumes of air, and it likewise is not practical to install a more powerful fan because of the detrimental effects of over-forcing the heated air in the winter. The simplest method of securing increased circulation during the summer is the installation of an attic fan. Through the proper manipulation of windows, such a fan will provide satisfactory circulation in any home. It will also circulate cool air during the night.

Crane Boilers FOR STEAM

No. 10 BOILER

The No. 10 Boiler has Crane's patented Controlled Water Travel, improved flue design and extra large ceiling heating surface. Fully insulated, baked on enamel steel jacket extends to floor. Extra high 12-inch base and removable grate lugs make it especially suitable for adaption to stoker firing.

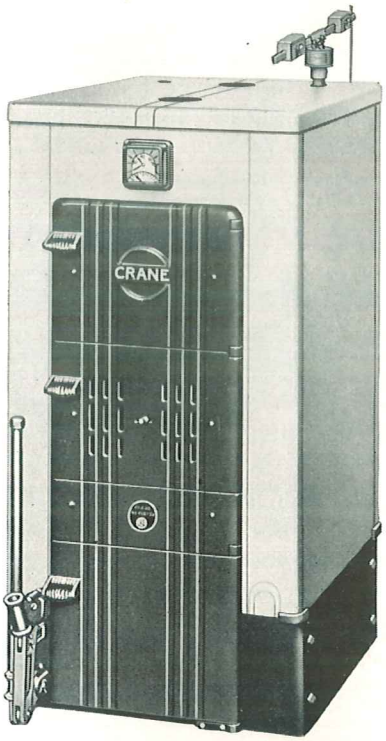


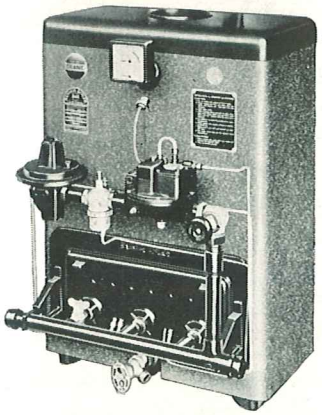
SERIES 25 BASMOR BOILER

The series 25 Basmor Boiler is designed for steam or hot water systems for the medium sized home. High efficiency is assured by Basmor staggered flue construction. Basmor Butterfly Burner provides complete combustion. All controls are concealed in handsome steel jacket with green enamel finish baked on.

No. 110 BOILER

The No. 110 Boiler is designed for either steam or hot water systems. May be installed as a hand fired unit and later converted to stoker firing. Controlled Water Travel, improved flue design, large ceiling heating area and jacket insulation point to the efficient use of fuel. Sturdy construction means long life — low upkeep cost.

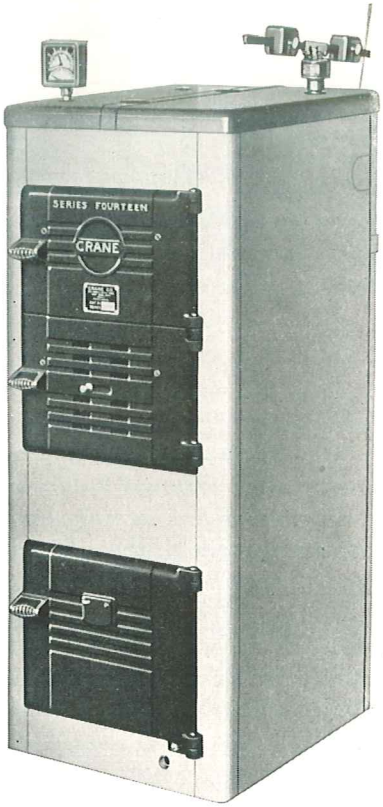




2WG GAS FIRED BOILER

In spite of its extreme compactness (less than 36 inches high) the 2WG will do a complete job of heating the small home. Because of wet base construction, it may be used in hot water systems in homes without a basement. Comes complete with all controls attached, ready to connect to the piping. Green steel jacket, heavily insulated.

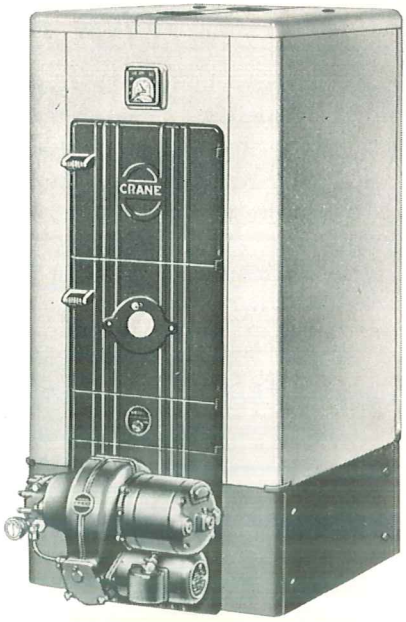
Crane Boilers are engineered in the Crane Laboratories, built by skilled workmen and backed by years of heating experience. The Crane line of boilers is complete in sizes and type for every residential purpose and for all fuels — coal, oil or gas.



No. 14 BOILER

The No. 14 is a completely new Crane boiler designed to fit perfectly the needs of the small home owner. Though extremely compact, it packs a whale of a lot of heating capacity. A completely water jacketed combustion chamber adds to effective heating area—permits installation on wood floors as is—makes possible gravity systems in homes without basements. Has exclusive features of other Crane boilers. May be installed hand fired and converted later to oil or stoker firing. For steam or hot water systems.

AND HOT WATER HEATING

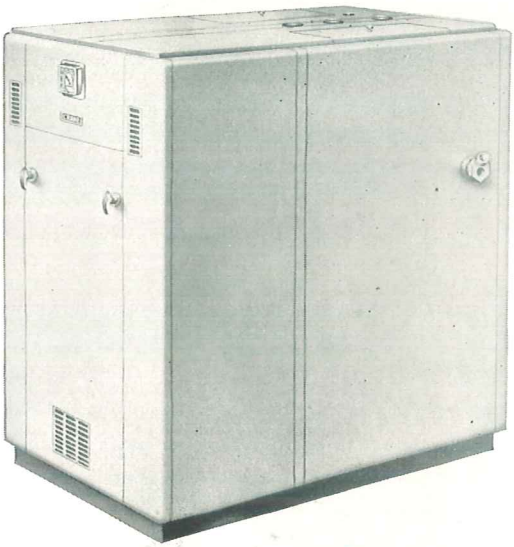


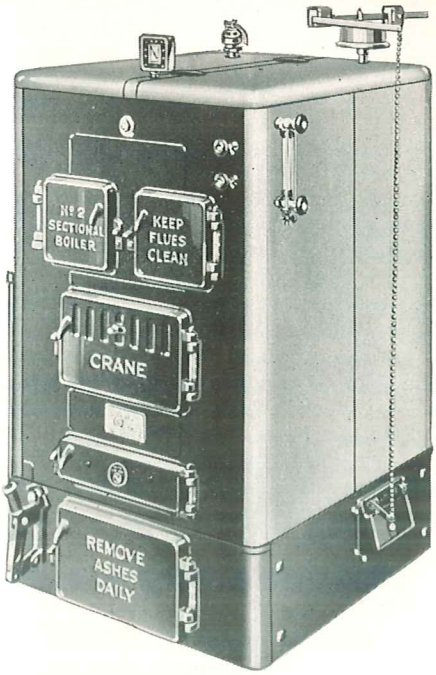
CONSERVOIL UNIT

The Conservoil Unit has all Crane features that give maximum heating efficiency. A 66 gallon water heater provides plenty of hot water for domestic use. Steel jacket with green baked-on enamel finish is good looking—thoroughly insulated. Steam or hot water.

No. 16 SUSTAINED HEAT BOILER

A highly efficient packaged oil burning unit with boiler and burner designed for each other—the whole for maximum efficiency. The patented sustained heat principle, exclusive with Crane, prevents the escape of heat when the burner shuts off, forcing the hot gases to give up their heat before they can escape up the chimney. The No. 16 Sustained Heat Boiler together with the burner is completely enclosed in an insulated steel jacket which has a beautiful green baked enamel finish.

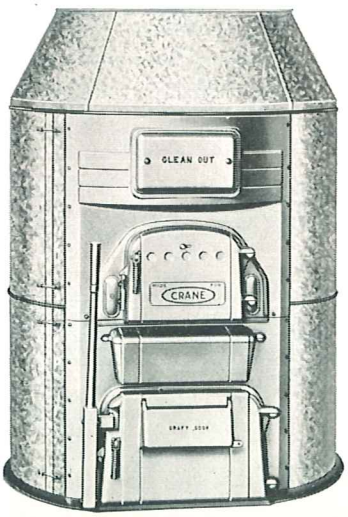




SECTIONAL BOILERS

Crane sectional boilers are made in a variety of sizes and styles for large homes. Inexpensive in original cost, they are scientifically designed and tested to save fuel dollars. Crane sectional boilers include a patented built-in baffle which directs the water over the hottest heating surfaces. Two-tone green jacket is heavily insulated.

CRANE *Warm Air* FURNACES

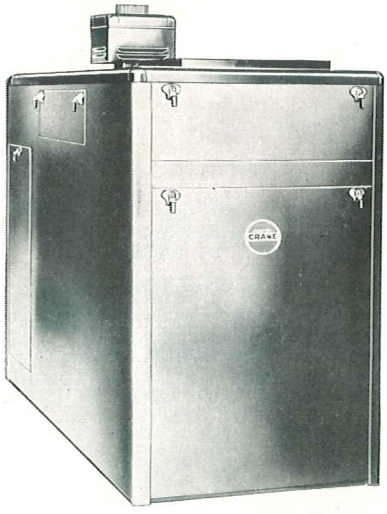


COAL-FIRED ROUND FURNACE

This furnace combines quality with low price. The radiator may be had in cast iron or steel. The casing is heavy galvanized sheet iron. Can be equipped with a fan for forced circulation if desired.

OIL-FIRED FURNACE

Oil burning compact warm air heating unit to filter, humidify and circulate conditioned air. Has efficient Conservoil Burner.



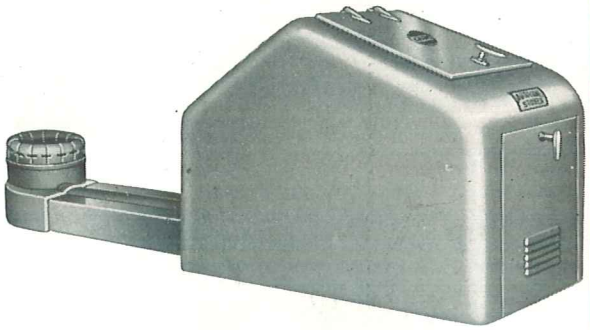
GAS-FIRED WINTER AIR CONDITIONING UNIT

This Basmor Gas Air Conditioning Unit is fully automatic, absolutely safe in operation. Provision is made for the filtering, heating, humidifying, and circulating of air. Green enameled jacket.

COMPLETE HEAT

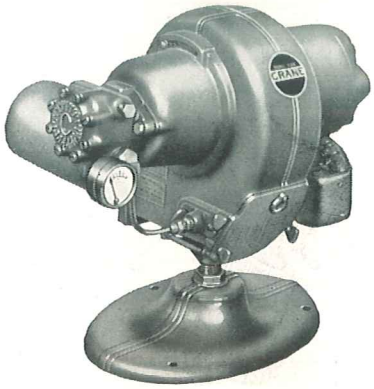
AUTOCOAL STOKER

This Autocoal Stoker obtains more heat units from the fuel; handles cheaper sizes efficiently; and by keeping an even temperature saves much fuel that would otherwise be wasted in the form of smoke and gases. Strongly constructed to assure long, satisfactory service. Operates on the forced under-feed principle that gives practically complete combustion. May be had as illustrated with hopper or bin-fed which eliminates necessity of fuel shoveling.



CONSERVOIL BURNER

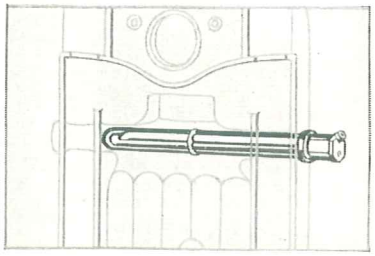
A quiet, efficient oil burner that possesses extreme simplicity. The "floating flame" burns in complete suspension giving clean operation. This Conservoil Burner has the blower and air control housing cast as a single unit to assure perfect alignment and quick interchangeability of parts. Simple in design—one moving part—the efficient design and simplified construction permit the burning of the cheaper grades of fuel oil without waste or unpleasant odors.



WATER

Water—piping hot—at any time of day or night—no delay—just turn on the faucet—that is the convenience that a Crane water heater will bring you. What's

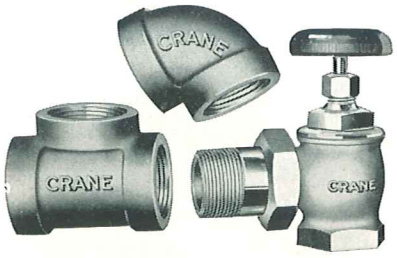
INDIRECT HEATER



This efficient indirect water heater is standard equipment on the No. 16 and Conservoil Boiler Burner Units and may be installed in the No. 10, and 14 Boilers. Cold water flows through the heater—is warmed to the proper temperature and is stored in a tank for use. Except under very unusual circumstances the heater will provide ample hot water for the average household.

Crane water heaters are made in a wide range of styles and sizes to suit every home and every purse. They may be had to operate by gas or electricity as desired. All are designed for economical operation and equipped with devices to make their operation absolutely safe.

VALVES AND FITTINGS

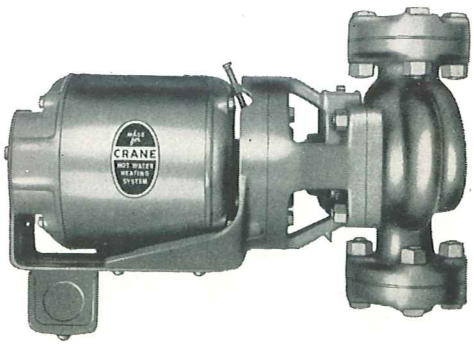


Small parts of the heating system, but extremely vital. The complete Crane line includes valves and fittings for any job.

AUTOMATIC CONTROLS

A fully automatic heating system requires controls that operate instantly and require minimum attention. The Crane line of quality controls is complete.

WATER SPECIALTIES



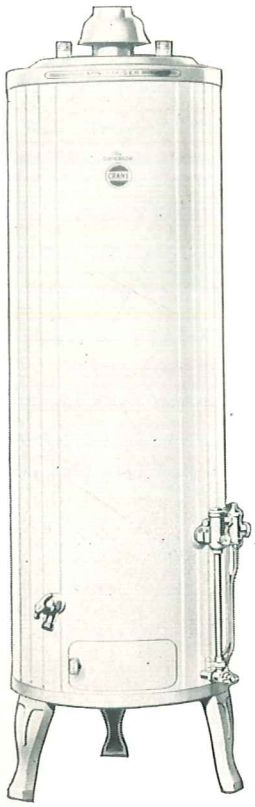
Crane hot water specialties are made to suit every installation. They include water heaters, circulators and flow control valves.

ING EQUIPMENT

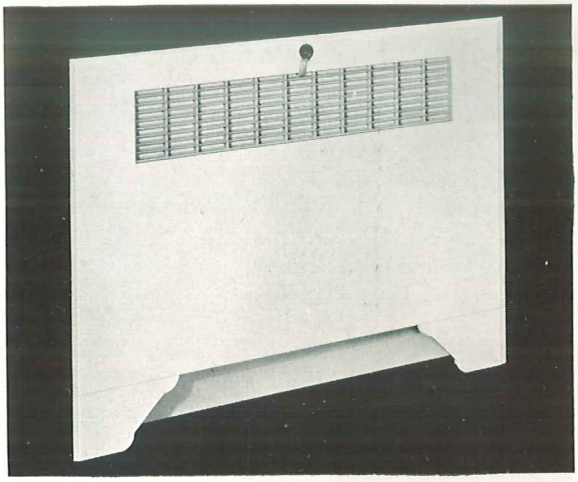
HEATERS

more Crane water heaters are designed with modern, money saving features that assure utmost economy in operation. Sizes and styles to suit any home.

GAS AND ELECTRIC HEATERS

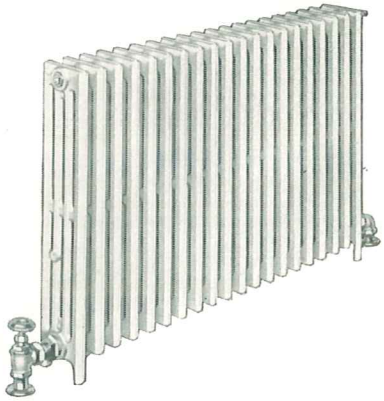


Crane Compac Radiators are available in a variety of styles for recessed or free-standing installation.



COMPAC RADIATORS

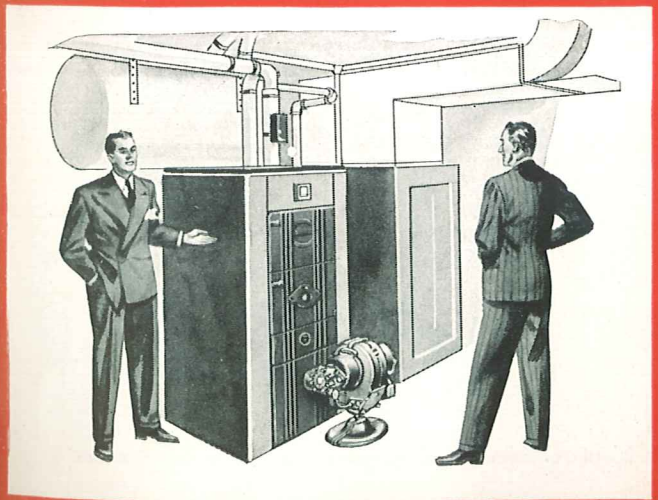
Slender in line—modern in design—Crane Compac Radiators represent the latest in home heating beauty and comfort. The diameter of the radiator sections, the thickness of the walls, the ratio of water content to heating surface—all have been scientifically calculated to give you the same efficiency in these small radiators as you would get in larger, old-fashioned ones.



CONVECTORS

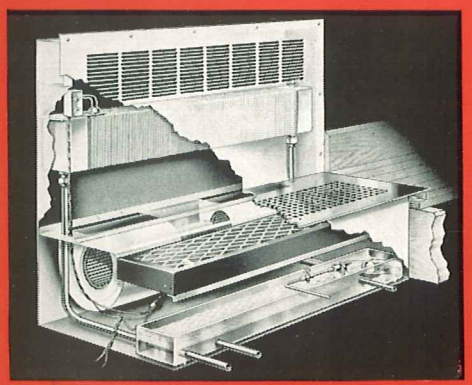
Crane convectors make an attractive installation and harmonize perfectly with any room decoration. The heavily finned, cast iron convectors are concealed behind a handsome panel and the warm air is distributed through the grills. Crane convectors may be fully or partially recessed or may be installed free standing.

WINTER AIR CONDITIONING



THE SPLIT SYSTEM

A combination of steam or hot water and forced warm air affording all the advantages of both. Will supply radiator heat in some rooms, warm air in others, as desired. Furnishes a year 'round supply of domestic hot water.



DUCTLESS UNIT

This unit delivers clean, filtered and humidified air, and at the temperature you desire without the necessity of ducts. In the summertime it will create a constant circulation of air that helps to keep your rooms comfortable. May be installed in old or new heating systems and is completely recessed in the wall and floor.

THESE STEPS ARE NECESSARY

TO ASSURE YOU AN EFFECTIVE SYSTEM

Complete satisfaction—carefree comfort throughout the years to come—that is what you expect of your heating system. If you have used the services of an architect in the designing of your new home, either he or the heating engineer will see that these benefits come to you. In the case of modernizing an old heating system, your Crane heating contractor will provide these services to assure you of satisfaction. And, too, where the heating system of a new home is planned by the Architect or Engineer, your Heating Contractor will see that it is properly installed. His knowledge and judgment will aid you in selecting a heating plant "tailor-made" to the size and type of your home. His installation of this equipment and the services he offers are your assurance of proper, economical heating.

1

1. Your Architect, Engineer or Heating Contractor, in planning a heating system, first makes a complete thermal survey of your house. Carefully, scientifically he calculates such important matters as heat loss . . . amount of radiation required . . . roper location of radiators or convectors. This scientific approach to your heating problem is assurance that the system you install will best meet the needs of your home.

2

2. After the heating system best suited to your home has been determined, taking into consideration local conditions, your Heating Contractor prepares a complete specification of materials. The fuel may be coal, oil or gas; you may prefer hot water or steam, single or double pipe system — no matter, the system he recommends will be completely unified, designed to heat your home efficiently.

3

3. Working from a carefully prepared plan, the Heating Contractor next installs your system, using skilled, efficient workmen. Much of the efficiency of a system depends on the installation; and the training and experience of the Heating Contractor are your assurance that the system will give you the maximum heat from the fuel you burn—assure you years of satisfaction as well.

4

4. Your Heating Contractor is an established member of your community. He is permanently in business to give you the kind of equipment—the kind of service you should have for years to come. His ability to furnish you the system best suited to your needs assures you that he places your interests first in recommending a heating system. He is as near to you as your telephone.

LOOK FOR THIS SYMBOL OF

4 WAY HEATING SERVICE

4-WAY HEATING SERVICE

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